

IN THE DRAWINGS

Please amend the drawings as indicated on the attached sheets.

Attachments:

Replacement Sheets (2 pages) Sheet containing Fig. 1, Sheet containing Fig. 5;

Annotated Sheets Showing Changes: (2 pages) Sheet containing Fig. 1, Sheet containing Fig. 5.

Figure 1 has been amended herein to place an arrowhead on the lead line for reference number 16, to add new reference numbers 11 and 17 to represent subsections of the gate 16, and to add an arrow to indicate the direction of initial flow, which was already implicitly shown in the original drawings as the most direct route between the gate 16 and the vertical wall 24.

Figure 5 has been amended herein to correct a numerical error in showing the vertical wall as 34, rather than the correct number 24.

REMARKS

Initially, applicant thanks the Examiner for the courtesy extended during a telephone interview which took place on April 23, 2008. During the interview, applicant's representative sent the Examiner a proposed draft of proposed claim amendments for discussion purposes.

During the interview, the Examiner informed applicant's representative that he reviewed the proposed claim amendment to claim 1; and that pending further search and consideration, the amendment appears to overcome the rejection of record.

The Examiner also requested that the limitations of the flow-receiving wall extending in a direction substantially transverse to the initial flow direction and the cavity-forming reinforcement member being permanently fused to the flow-receiving wall of the main body also be added to each of the independent method claims. Applicant has made the requested changes herein.

Further, during the interview, the art-based rejection of claims 1, 4-6, 9 and 12 was discussed. Applicant's representative argued that the claimed invention, as recited in these claims, is patentably distinct over the applied references, since Horvath teaches a flow-receiving wall which is disposed at an acute angle relative to an initial flow direction, and also teaches carbide inserts which are soldered on to removable steel mounting blocks, rather than being permanently attached to the flow-receiving wall, and since Scruggs' teaching to use only a single grade of steel throughout the interior of his mold teaches away from applicant's claimed combination of low-grade steel for most of the mold body with high-grade steel for the flow-receiving wall.

Upon entry of the present amendment, the claims in the application are 1, 4-6, 9 and 12, of which claims 1, 5 and 6 are each independent. All of the pending claims are being amended herein.

The above-identified Office Action has been reviewed, the applied references carefully considered, and the Examiner's comments carefully weighed. In view thereof, the present amendment is submitted. It is contended that by the present amendment, all bases of rejection set forth in the final Office Action have been traversed and overcome. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

Applicant respectfully submits that all of the above amendments are fully supported by the original application. Applicant also respectfully submits that the above amendments do not introduce any new matter into the application, since all of the subject matter thereof was expressly or inherently disclosed in the original application, including the drawings.

Amendments Presented

The specification has been amended herein to further discuss the geometry and structure of the disclosed casting die, and to provide explicit antecedent basis for the new claim amendments. The drawings have been amended to correspond to the amendments to the specification, and to correct a numerical error in Figure 5 which the Examiner helpfully pointed out during the April 23 telephone interview.

Each of the independent claims has been amended herein to specify that the main body of the mold has a flow-receiving wall extending in a direction substantially transverse to an initial flow direction and the cavity-forming reinforcement member is permanently fused to the

flow-receiving wall of the main body.

Claims 4, 9 and 12 have each been amended to specify that the cavity forming reinforcement member is disposed adjacent to the gate, rather than --in a position closest to the gate--, as the term "closest" is no longer believed to be necessary in light of the other amendments. It is respectfully submitted that no new matter has been added to the application by the present amendment, and all of the amendments are fully supported by the original disclosure.

Claim Rejections – 35 USC 103

At item 3 of the Office Action, the Examiner rejected claims 1, 4-6, 9 and 12 under 35 USC 103(a) as unpatentable over Horvath in view of Scruggs et al. In the rejection, the Examiner states that Horvath discloses the die and method of manufacture thereof comprising use of a main die body 16, 17 including a gate 14 and having a wall surface for defining a mold cavity and a cavity forming member 19, 20 or an insert die disposed or embedded at a location in a recess near the gate, the die main body and insert die are made of steel, and the insert part facing and forming part of the mold cavity.

The Examiner further states that Horvath fails to teach the use of better steel for the insert, and cites Scruggs et al. for a teaching of using a better steel such as maraging steel as a mold steel for the purpose of effectively improving the thermal stability and mechanical properties of die parts. The Examiner states that it would have been obvious to modify Horvath to use better steel for the insert as taught by Scruggs in order to effectively reduce hot corrosion and stress impact due to casting of molten steel.

Applicant's Response

As noted above, each of the independent claims has been amended herein to specify that the main body of the mold has a flow-receiving wall extending in a direction substantially transverse to an initial flow direction and the cavity-forming reinforcement member is permanently fused to the flow-receiving wall of the main body.

Upon review of the cited art and the Examiner's comments, Applicant respectfully traverses the above rejection, and submits that as presently amended, each of claims 1, 4-6, 9 and 12 is

patentably distinct over the cited art for the reasons expressed below.

The die of Horvath relates primarily to the pressure molding of plastic parts, although it does state in column 1, lines 9-11 that the “invention has utility in connection with other molds, for other uses”. The carbide inserts of Horvath are soldered to removable mounting blocks, and placed within the die to limit wear from the injected plastics. Horvath specifically states that it is disfavored to solder the inserts directly to the die walls, since the heating of the die results in deteriorating the tempering of the die walls, causing the die to fail sooner than expected (column 1, lines 40-50).

Horvath fails to teach, disclose, suggest or render obvious a casting mold in which the main body of the mold has a flow-receiving wall extending in a direction substantially transverse to an initial flow direction, and in which the cavity-forming reinforcement member is permanently fused to the flow-receiving wall of the main body.

Upon review of Scruggs, applicant notes that although the Examiner correctly points out that Scruggs states in column 4, lines 19-23 that “It is preferred that the die-casting mold 32, and especially the portion of the mold that forms the internal molding surface 38, be made of a steel that is highly resistant to heat checking, such as H-11 or H-13 tool steels or a maraging steel”, this does not overcome the disadvantages of Horvath, and actually teaches away from applicant’s combined use of an inexpensive lower-grade steel for the main portions of the mold’s main body, with the more expensive and crack-resistant maraging steel only in a limited area of the flow-receiving wall, as claimed.

Scruggs et al. also fails to teach, disclose, suggest or render obvious a casting mold in which the main body of the mold has a flow-receiving wall extending in a direction substantially

transverse to an initial flow direction, and in which a cavity-forming reinforcement member is permanently fused to the flow-receiving wall of the main body.

In addition, there is no teaching in these references to weld or fuse the higher-grade reinforcing metal to the die. If anything, Horvath teaches away from heating the die walls via brazing or soldering, while Scruggs et al. teaches away from only using small amounts of the maraging steel at certain limited areas of the die.

The applicant notes that the U.S. Court of Appeals for the Federal Circuit has established that a *prima facie* case of obviousness can be rebutted if the applicant ...” can show ‘that the art in any material respect taught away’ from the claimed invention” *In re Geisler*, 116F.3d 1465, 1469, 43 USPQ2d 1362,1365 (CAFC 1997). “A reference may be said to teach away when a person of ordinary skill, upon reading the reference, ... would be led in a direction divergent from the path that was taken by the applicant” *Tec Air, inc. v. Denso Mfg. Mich. Inc.*, 192 F3d 1353, 1360, 52 USPQ2d 1294, 1298 (CAFC 1999), *In re Haruna*, 249 F 3d 1327; 58 USPQ 2d 1517 (CAFC 2001). Since Horvath teaches away from the applicant’s claimed device, instead of rendering applicant’s claims obvious, Horvath actually provides *evidence of non-obviousness* of applicant’s invention.

In this regard, applicant respectfully notes that the above noted distinctions are significant and that the die according to the invention can be produced more efficiently, thus reducing the cost of parts formed from the die.

Applicant respectfully submits that the differences between the claimed invention and the cited references are substantial and significant, and therefore applicants’ invention is non-

obvious as compared to the Horvath and Scruggs et al. references, as well as the other references of record.

It is respectfully submitted that the noted differences between the claimed limitations and the cited art patentably distinguish over the references of record, whether considered individually or in any combination thereof.

For all of the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the rejections of record, and allowance of the pending claims.

Conclusion

The applicant respectfully submits that all of the above amendments are fully supported by the original application. The applicant also respectfully submits that the above amendments do not introduce any new matter into the application or raise new matters for consideration by the Examiner.

Based on all of the foregoing, the applicant respectfully submits that all of the rejections set forth in the Office Action are overcome, and that as presently amended, all of the pending claims are believed to be allowable over all of the references of record, whether considered singly or in combination. The applicant requests reconsideration and withdrawal of the rejection of record, and allowance of the pending claims.

If any issues remain unresolved, the applicant respectfully requests that the Examiner telephonically contact the applicant's undersigned representative to expeditiously resolve any such issues remaining in the prosecution of the application.

Favorable consideration is respectfully requested.

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Respectfully submitted,



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CERTIFICATE OF ELECTRONIC TRANSMISSION

I hereby certify that this correspondence is being electronically transmitted, via EFS web, to the United States Patent and Trademark Office on April 30, 2008.



William Blackman